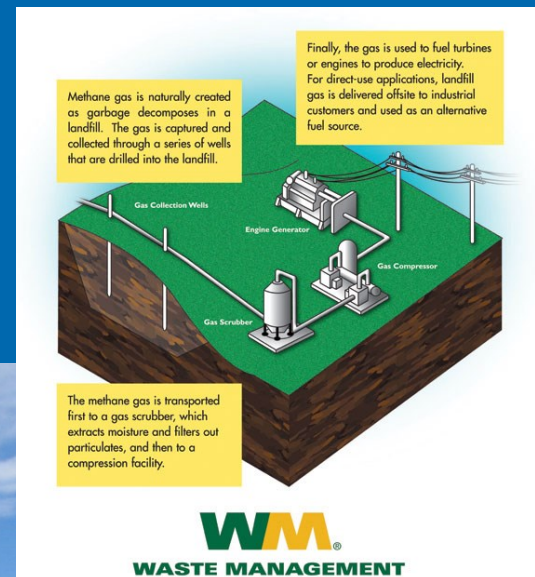




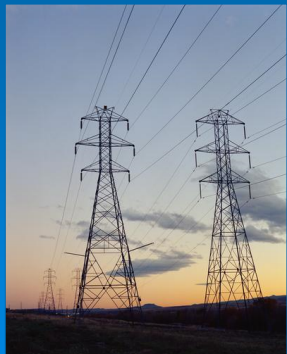
REDACTED VERSION

RE on CL in Region 8



9797313

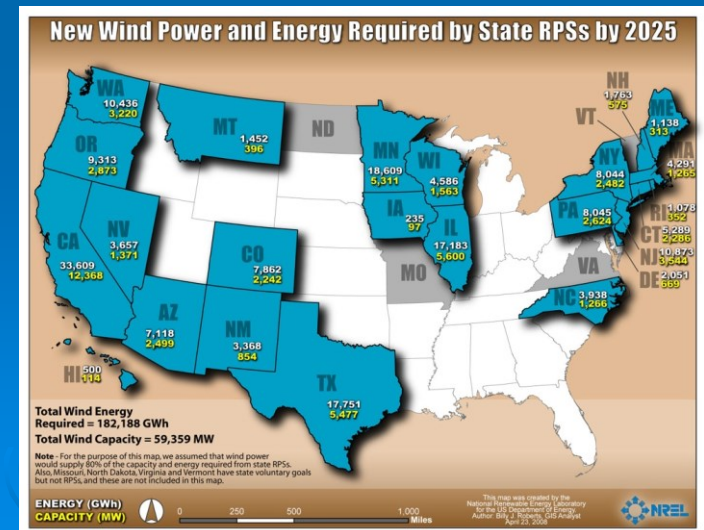
Why Emphasize Renewable Energy on Contaminated Land



- *Many megawatts of Renewable Energy (RE) are needed to combat climate change; makes sense to locate it on compromised lands to extent possible;*
- RE can preclude inappropriate future land use: e.g. residential use on land cleaned to industrial standards;
- RE provides a short or long term beneficial reuse of land;
- *RE can reduce operation and maintenance costs;*
- Existing infrastructure (roads, transmission) at most cleanup

Why Emphasize Renewable Energy on Contaminated Land

- RE creates economic redevelopment opportunities for properties where other options are limited;
- More States are adopting renewable energy standards;
- Development on CL reduces Greenfield development; and
- *Finally, siting renewable energy on contaminated land is a better way to reduce carbon footprint of cleanup actions than purchasing offsite renewable energy*



Basic Definitions



= Power



X



= Energy

Summitville Mine



Current Projects

➤ Hydro Plant at Summitville Mine



- Will provide clean energy for ongoing treatment of acid mine drainage
- Foundation and Penstock in place – expect to be generating energy early summer 2010.
- Few if any ecological concerns associated with diverting water.

Anaconda Smelter Site

Region 8 installed 60m met tower to measure wind speed on county-owned property, and will make data available to potential wind developers.



Region 8 will then move the met tower to another piece of contaminated property.





Daily Emissions of Carbon Pollution

Current Projects

Gilt Edge Green Power Pilot

- Goals:
- Erect medium sized turbines to power treatment plant
- Use project to attract utility-scale development, and sell energy to grid.



Impediments to RE on CL

- Remedy Selection Criteria have not been interpreted in a way that gives preference to GR
- No policy imperative for lifecycle analysis, especially with respect to energy costs.
- Lack of incentives for greening cleanups.



- Possible incentive:

- Use federal funding designated for offsite RE purchases (green tags, RECs) to help finance RE systems at our cleanups.
- Region 8 wants to pilot this idea at Gilt Edge.



Greener Cleanups in Region 9

NARPM 2009 Reprise

Harold Ball

R9 Superfund Technical Support

December 15, 2009

History



- Cleanup Clean Air
 - Cross Program Initiative SFund and Air
- SERG – Smart Energy Resources Guide
 - Excellent resource for RPMs
 - <http://www.epa.gov/nrmrl/pubs/600r08049/600r08049.htm>
- Contract Language – RAC II and ERRS
- More information at
 - <http://www.epa.gov/region09/climatechange/green-sites.html>

Current Activities

- Regional Philosophy
 - Management is very supportive
 - Clean diesel is a priority for us
 - RPMs are our main assets
- Current Highlights
 - Romic Life Cycle Analysis – Tool Development
 - Goal here is to make better informed decisions
 - Props to Karen Scheuerman and Steve Armann in our Waste Division

R9 Greener Cleanups Policy



September 14, 2009

Greener Cleanups Policy EPA Region 9

Background

As part of our mission to protect human health and the environment, EPA is committed to using effective and environmentally sustainable strategies to restore contaminated land for beneficial uses. EPA's cleanup programs already promote sustainability by removing health threats from toxins left in the environment by previous unsustainable industrial practices. However, with consideration and planning, additional sustainability benefits often can be achieved when a cleanup action is performed. The Region 9 Greener Cleanups Policy is intended to ensure that sustainability is considered in cleanups by establishing a preference for using strategies, practices and technologies that reduce the environmental footprint of Superfund and RCRA cleanups.

Policy

While first meeting all statutory and regulatory requirements of Superfund and RCRA, EPA Region 9 will strive to integrate sustainability practices into its cleanup actions. This policy establishes a preference for use of a range of practices, strategies and technologies to support the implementation of greener cleanups.

- Reduce air emissions, including greenhouse gas emissions, by using clean diesel technology and alternative fuels.
- Conserve natural resources and energy through efficient energy use and by using renewable energy technologies.
- Minimize overall virgin material use and waste generation as well as reuse and recycle existing resources.
- Minimize toxics in materials and products.
- Minimize impacts to water quality and water resources by water conservation and efficiency measures.

These sustainability practices will be evaluated in light of the site-specific situation at each cleanup site. Sustainability will be incorporated where determined appropriate into Superfund and RCRA cleanups performed by EPA or under EPA oversight. Not all strategies will be appropriate in every case. Cleanups that do not satisfy threshold requirements for protectiveness, or do not meet other site-specific cleanup objectives, are not considered to be "greener cleanups" under this policy.

Sustainability strategies and technologies should be evaluated at every stage of the cleanup process to achieve the greatest level of benefit. In implementing this policy, project managers are encouraged to consider the application of life cycle analysis tools. These tools can help account for the manufacture, use, and transport of materials, products, equipment and wastes associated with all phases of a cleanup. Region 9 will continue to pursue emerging sustainability technologies and strategies to expand the scope of opportunities at Superfund and RCRA cleanups.



- Focus Areas:
 - Air Emissions
 - Energy Use
 - Material Use
 - Toxic Materials
 - Water Efficiency

Challenges

- How to incorporate GR into our decisions?
- How best to use existing authorities?
- How to develop the case for PRP implementation?
- How do we incorporate into 5YRs?

Future Goals

- Move to Implementation
 - Green Remediation Strategy
 - RE-Power Partnerships (NREL)
 - Site Decisions
- Cross Program Consistency
 - Contribute solutions to the problem

Closing Thoughts

- What help do you need?
 - HQ and regional staff are busy
 - Let us know what you need
 - tools, training, technical support
 - Share success stories with others
 - tech transfer works



19th Annual Training Conference
June 2-5, 2009 • Atlanta, Georgia

NARPM 2009

National Association
of Remedial Project Managers

Green Remediation

Estimating the Environmental Footprint
at a Corrective Action Clean-up

Pilot Study at Romic East Palo Alto

Karen Scheuermann, US EPA Region 9
scheuermann.karen@epa.gov

3 June 2009

Green Remediation



Theory:

Consider all environmental effects of remedy implementation and incorporate options to maximize the net environmental benefit of cleanup actions.



Implementation:

Installation of “greener” remedies

Development of metrics for estimating environmental footprints

Overview



- ★ **How we conducted our Pilot Study:
methodology and results**
- ★ **Applying the results to our clean-up sites**
- ★ **Importance of using Life-Cycle Assessment
principles**

Pilot Site: Romic East Palo Alto

- 14-acre hazardous waste management facility
- Soil and ground water contaminated with VOCs (such as TCE and PCE)
- Contamination to a depth of 80 feet



Purpose of the Pilot Study



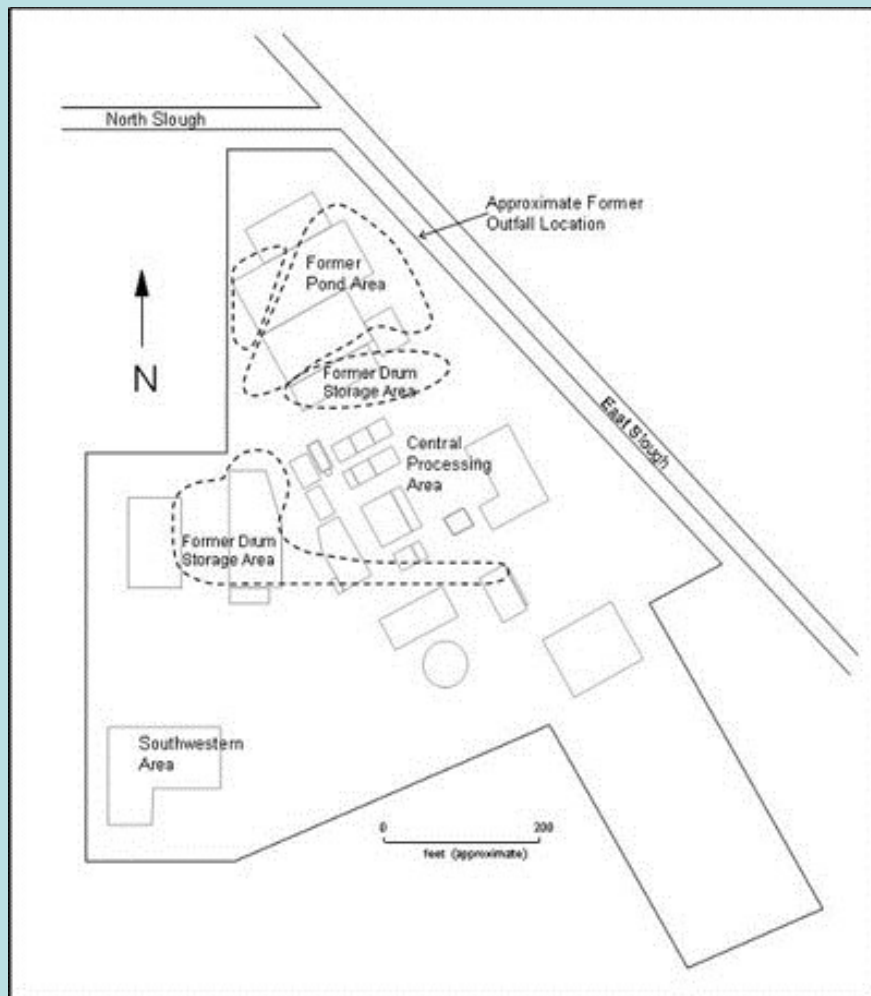
Compare the environmental footprints of three alternative remedies at Romic

- Is it possible to determine the environmental footprint of the alternative remedies?
- Did we select the “greenest” remedy?
- How important is off-site manufacture for the environmental footprint?



Develop a methodology to be used for estimating environmental footprints

Remedy Alternatives at Romic



Alternative 2 (Hybrid)

Extraction wells *and*
bioinjection wells

30 years to complete

Alternative 3 (Bioremediation)

Bioinjection wells only

10 years to complete

Alternative 4 (Pump and Treat)

Extraction wells only

40 years to complete

*Alternative 3 has already been chosen
for Romic, so this analysis did not affect
the remedy decision.*

Remedy Alternatives at Romic

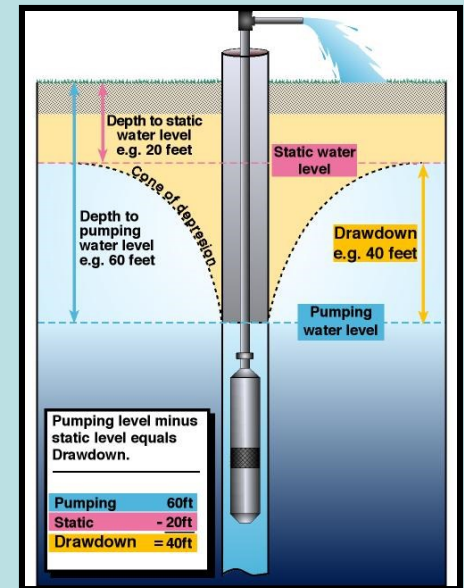


Bioremediation:

uses injections of cheese whey and molasses mixed with fresh water

Pump and Treat:

treatment of ground water in an air stripper followed by carbon filters



Boundaries of the Pilot Study



Functional Unit:

Ground water remediation.



Temporal Boundary:

Construction and active life of each alternative remedy.



System Boundary:

On-Site Activities (Level 1)

Transport To and From Site (Level 2)

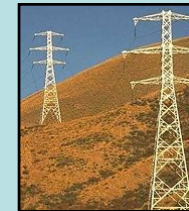
Manufacture Off-Site (Level 3)



At Romic We Evaluated...

Resources and Energy Used

- Water
- Construction Materials
- Electricity
- Fossil Fuel



Wastes Generated

- Spent Carbon
- Wastewater



Air Emissions

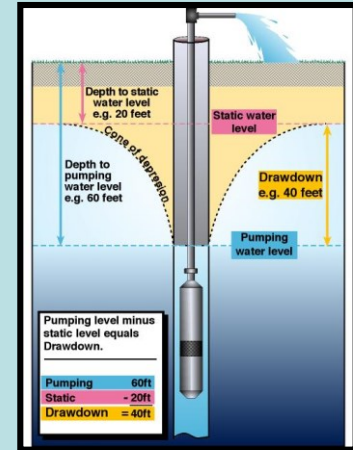
- NO_x, SO_x, PM, CO₂



Level 1: On-Site Activities



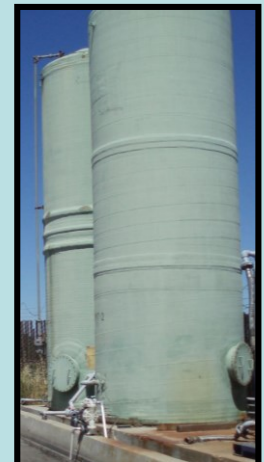
Well Construction



Groundwater Extraction



BioInjections

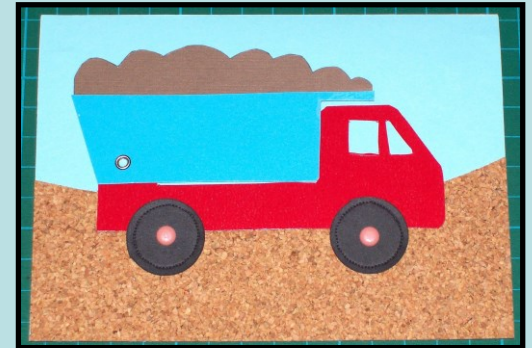


Groundwater Treatment

Level 2: Transport To and From Site



Operators to Site

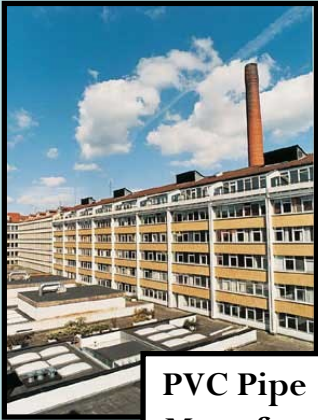


Wastes off Site



Materials to Site

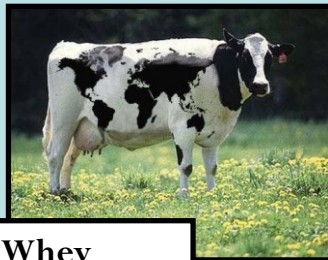
Level 3: Off-Site Manufacture



**PVC Pipe
Manufacture**



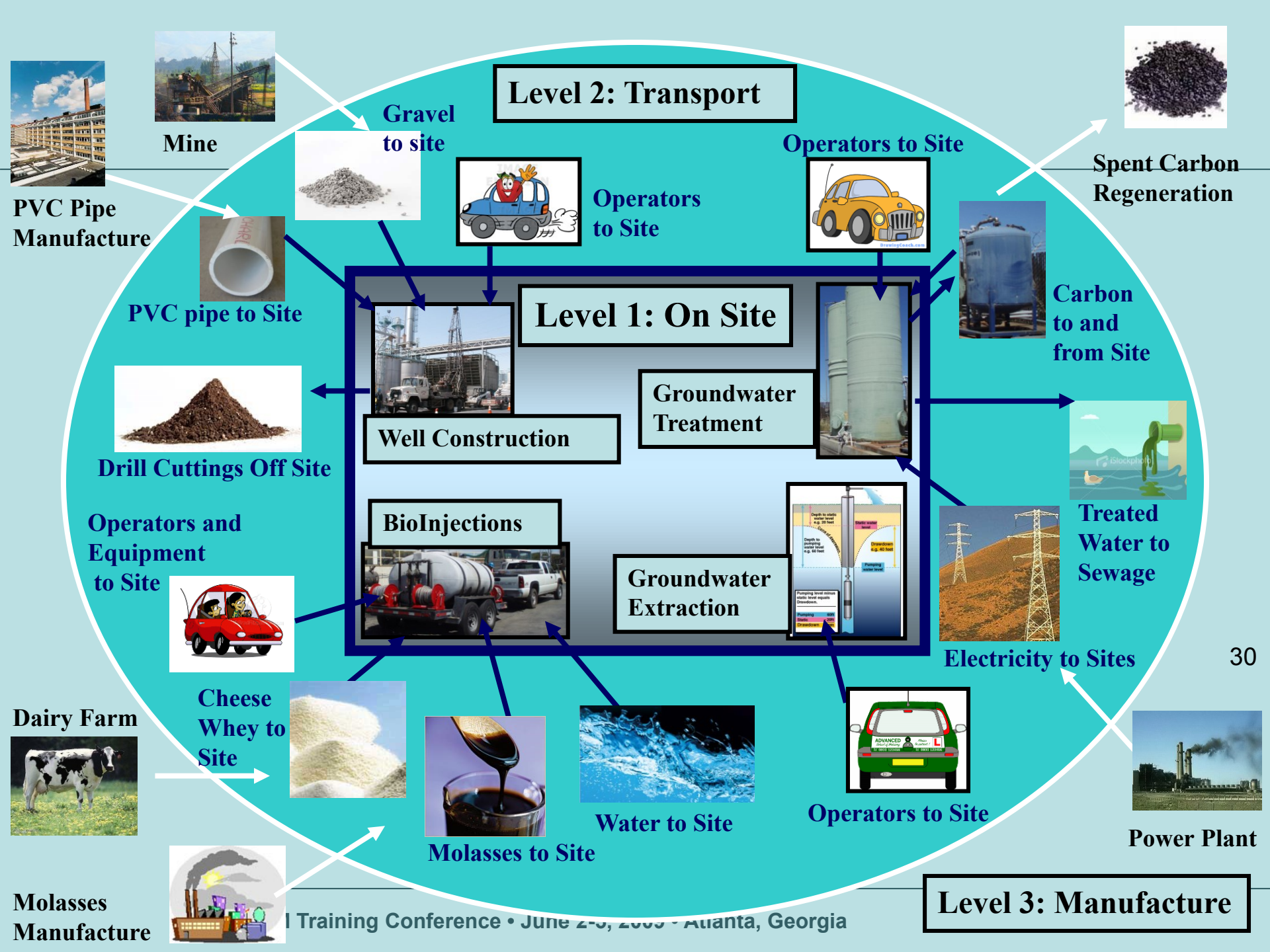
Gravel Mining



**Cheese Whey
Processing**



**Electricity
Production**

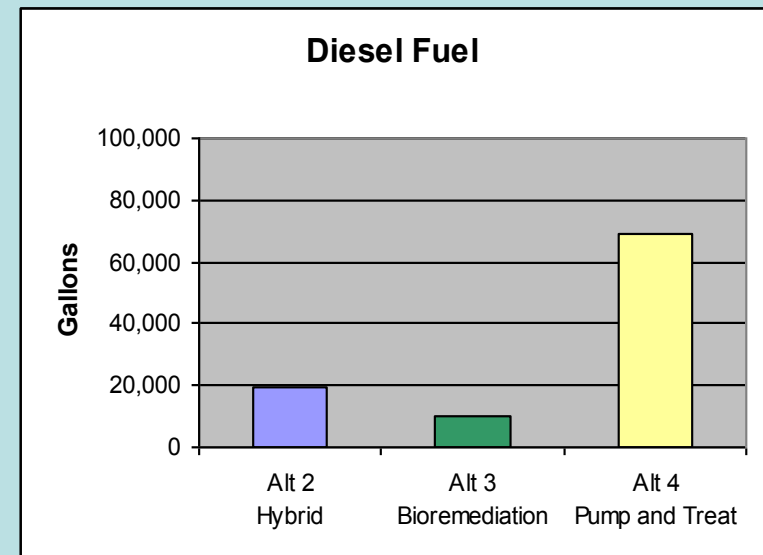
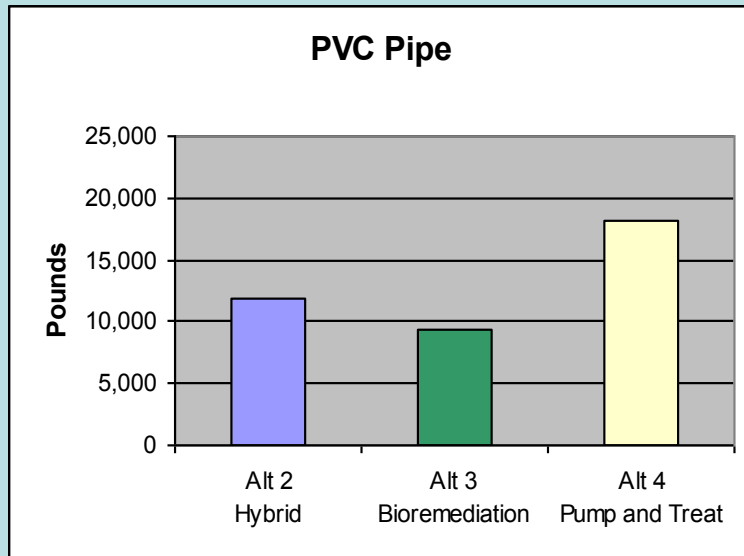


The background of the slide is decorated with several stylized fireworks and stars. The fireworks are depicted with purple and red trails radiating from a central point, and yellow stars with green outlines are scattered around them. A central blue rectangle with a black border contains the word "Results!" in a light blue serif font.

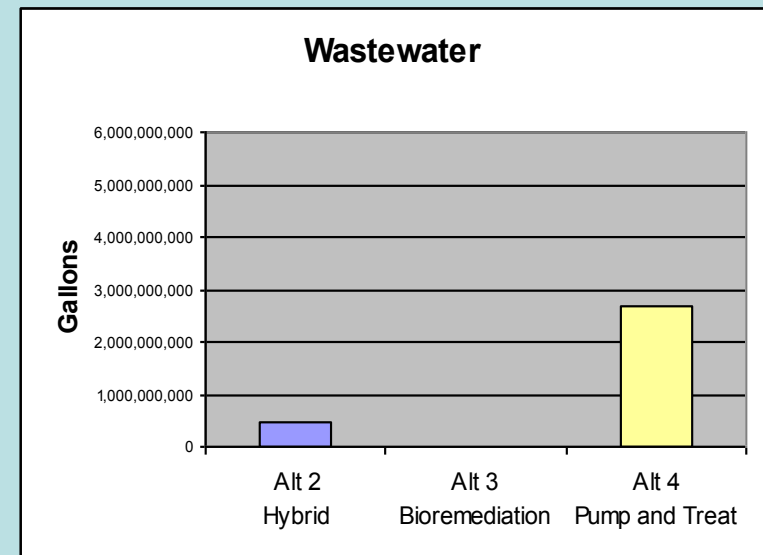
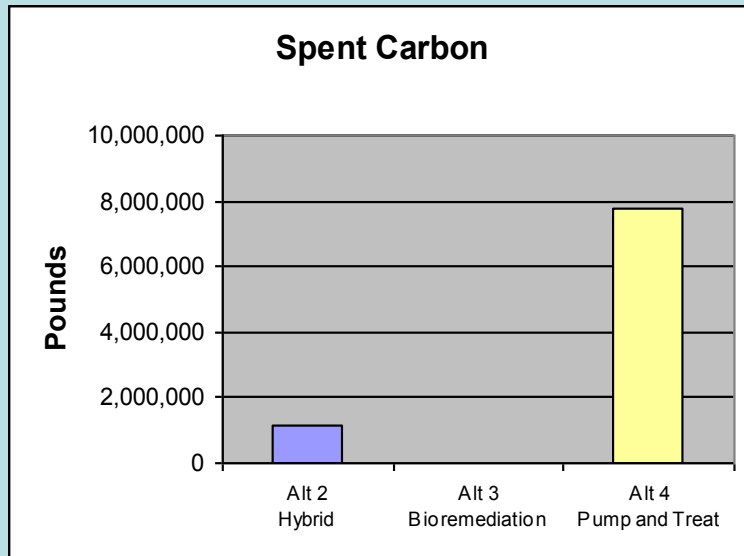
Results!

Pilot study is still in progress and results at this stage are preliminary.

Results – Materials and Fuel



Results – Wastes Generated

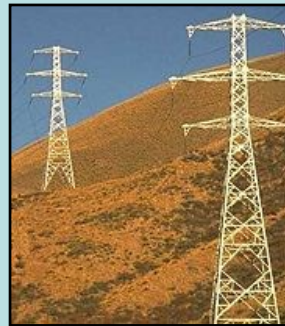


Levels 1, 2, and 3 Combined

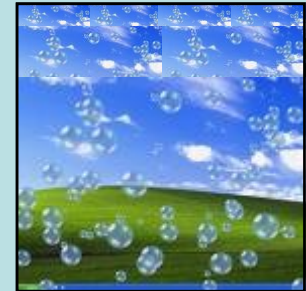
Adding Level 3 (Off-site Manufacture) to the mix



water used



electricity required



**carbon dioxide
emitted**

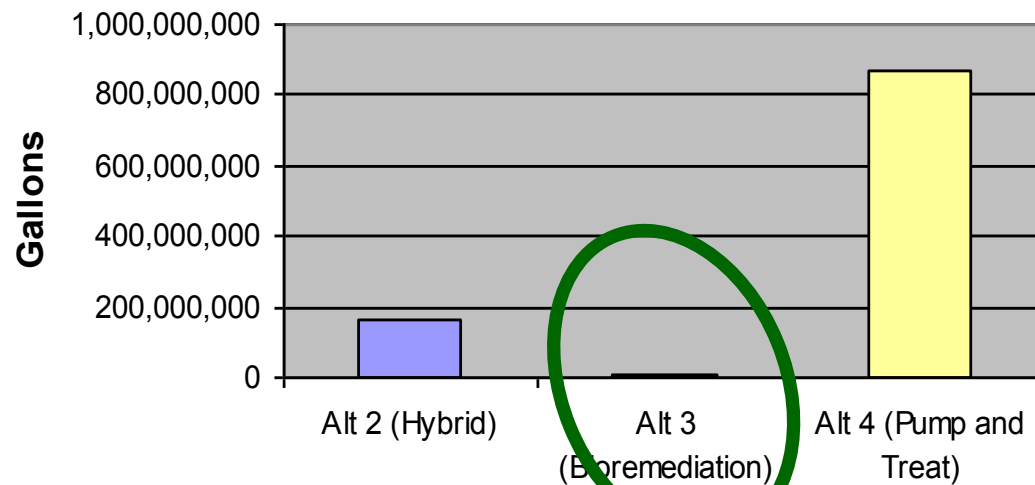
Results – Water



Water

Levels 1, 2 & 3

(On-site Activities, Transport, & Off-site Manufacture)

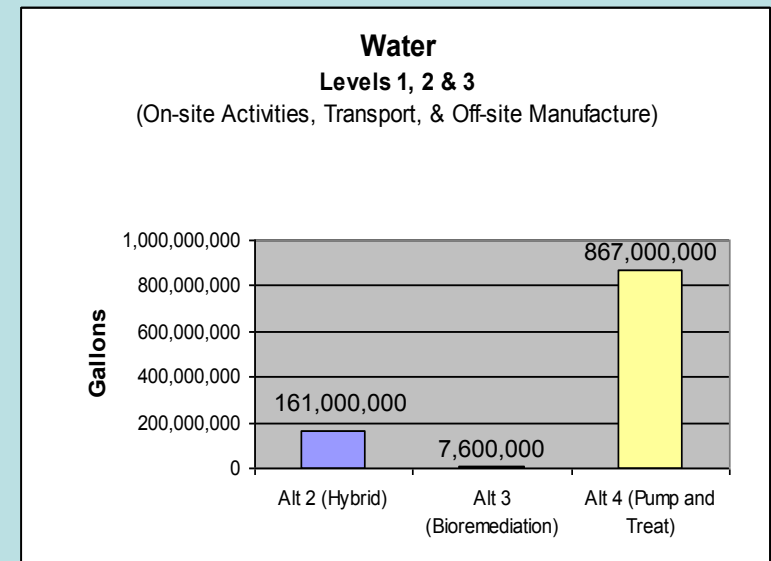
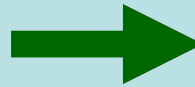
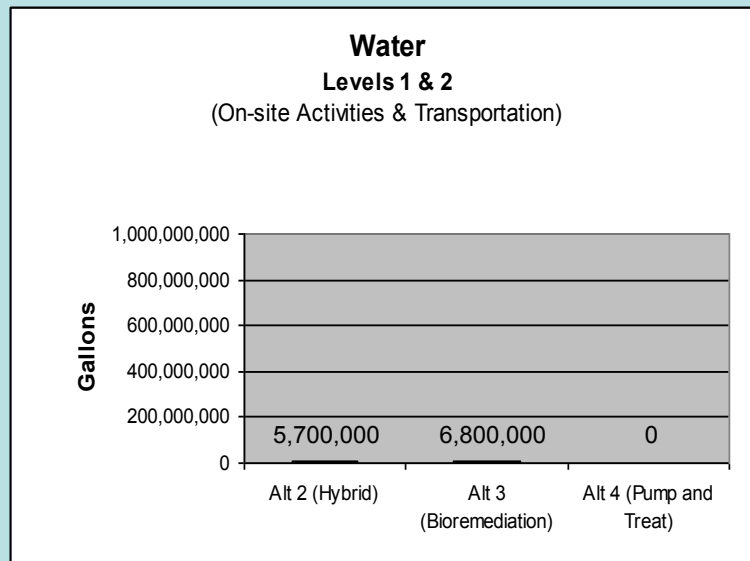


These values are for the life-time of each alternative remedy.

Results – Water



Including Level 3 (manufacturing) in the analysis substantially increases our estimate of the water footprint.



Not including off-site manufacturing

Including off-site manufacturing

Results – Water



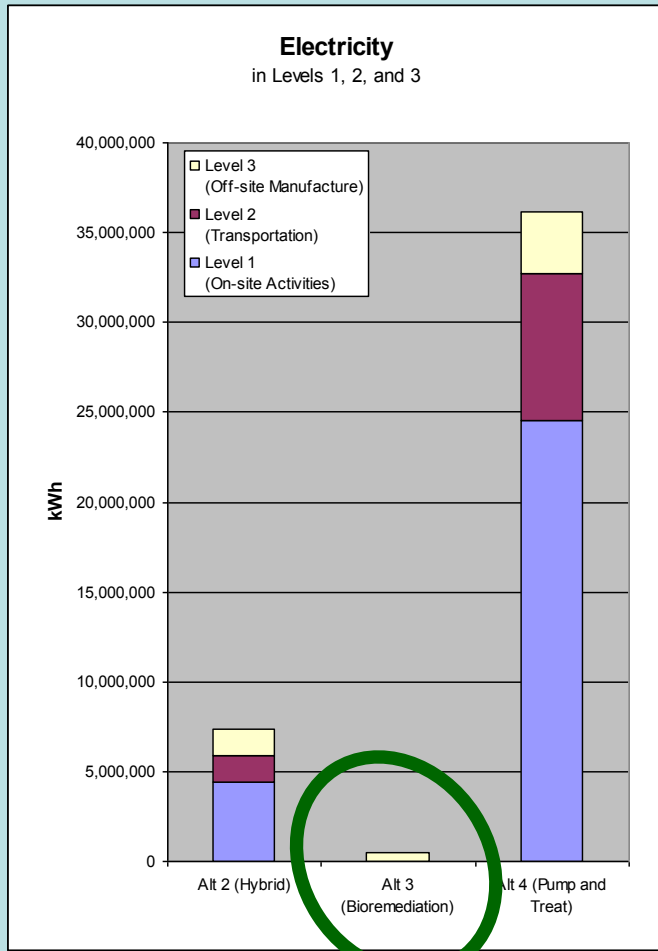
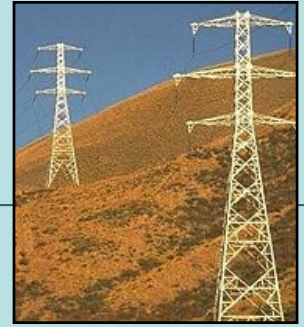
Issues related to water:

- Water withdrawn *versus* water consumed.
- Water withdrawn in “water scarce” areas *versus* water withdrawn in “water abundant” areas.
- Potable *versus* non-potable water.



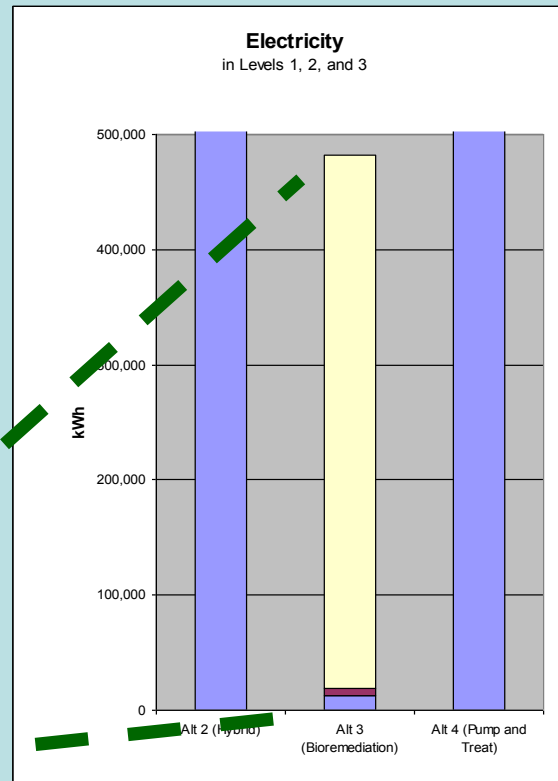
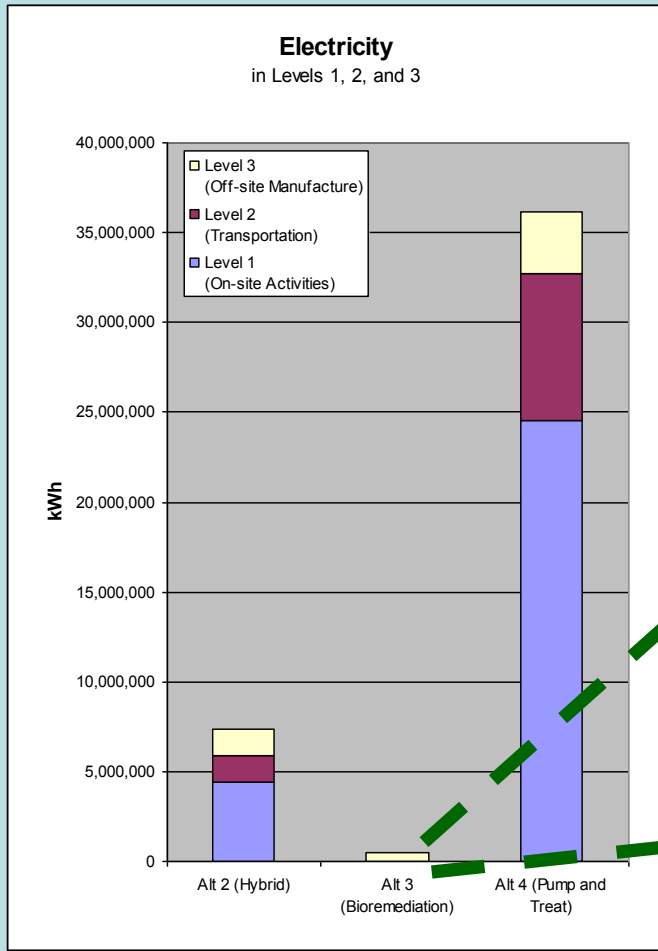
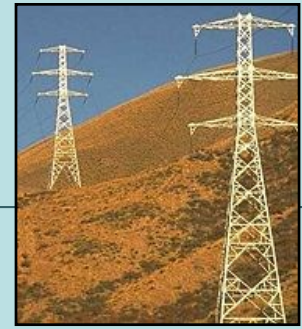
Maybe, not all water is equal... how should we take this into consideration?

Results – Electricity



These values are for the life-time of each alternative remedy.

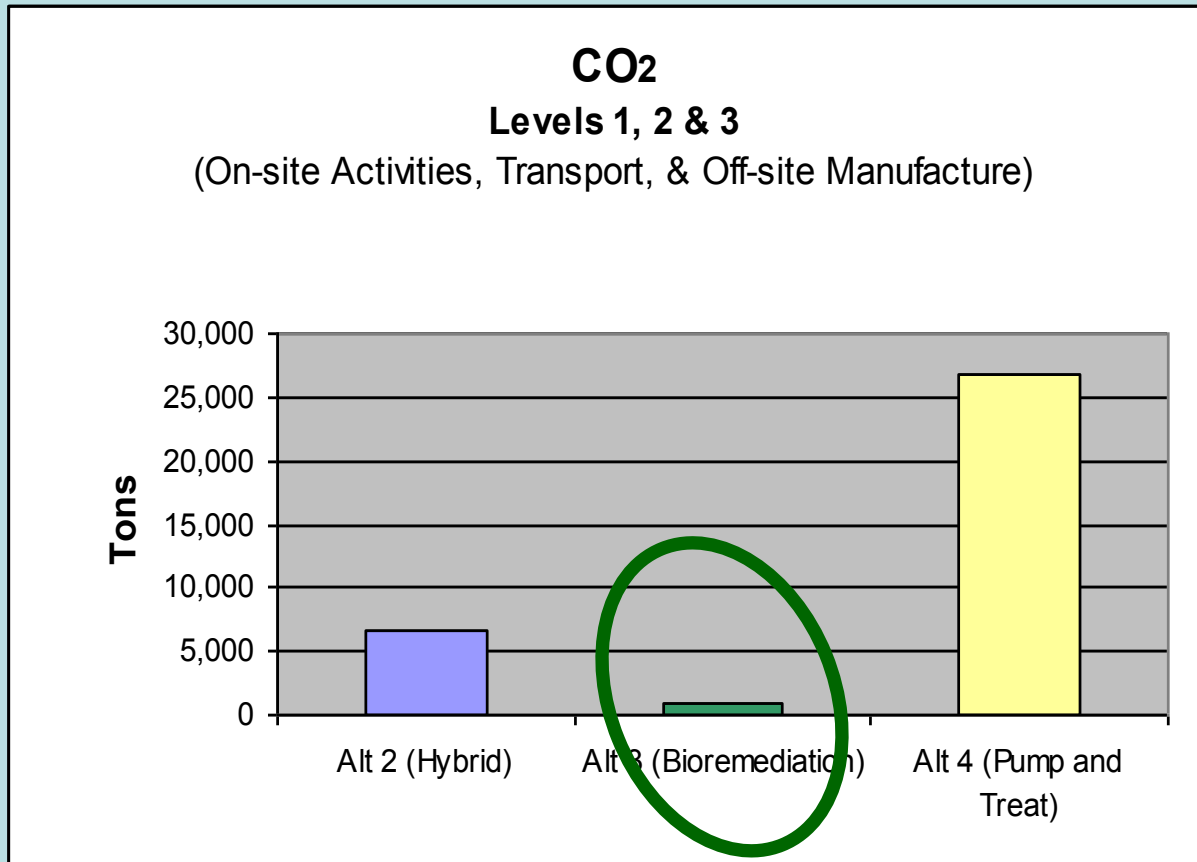
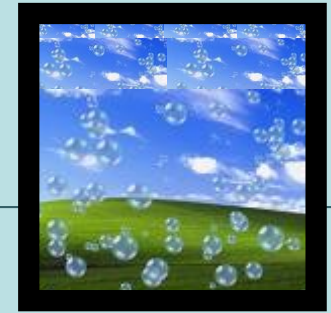
Results – Electricity



We are used to taking into account on-site electricity in evaluating environmental footprints.

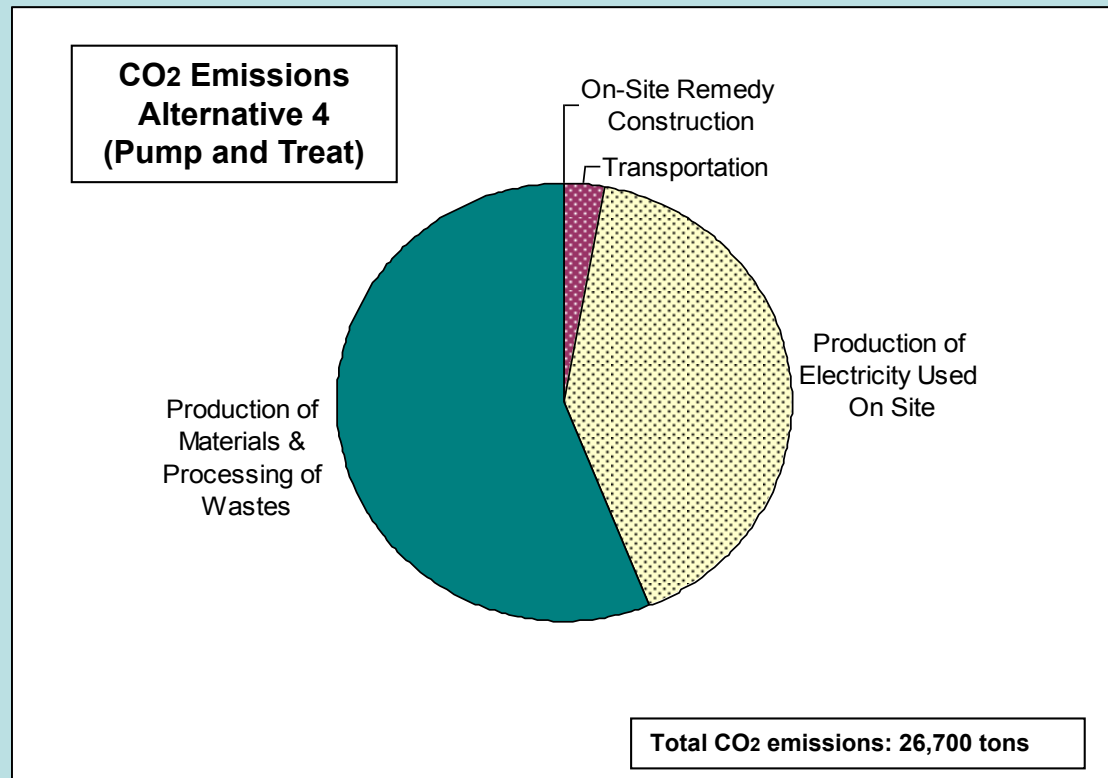
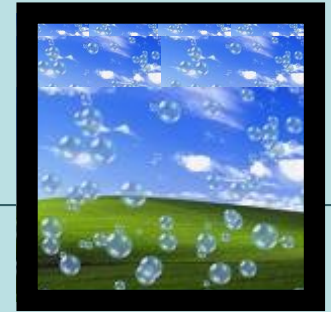
However, electricity required for transport and manufacture are also important.

Results – CO₂ Emissions



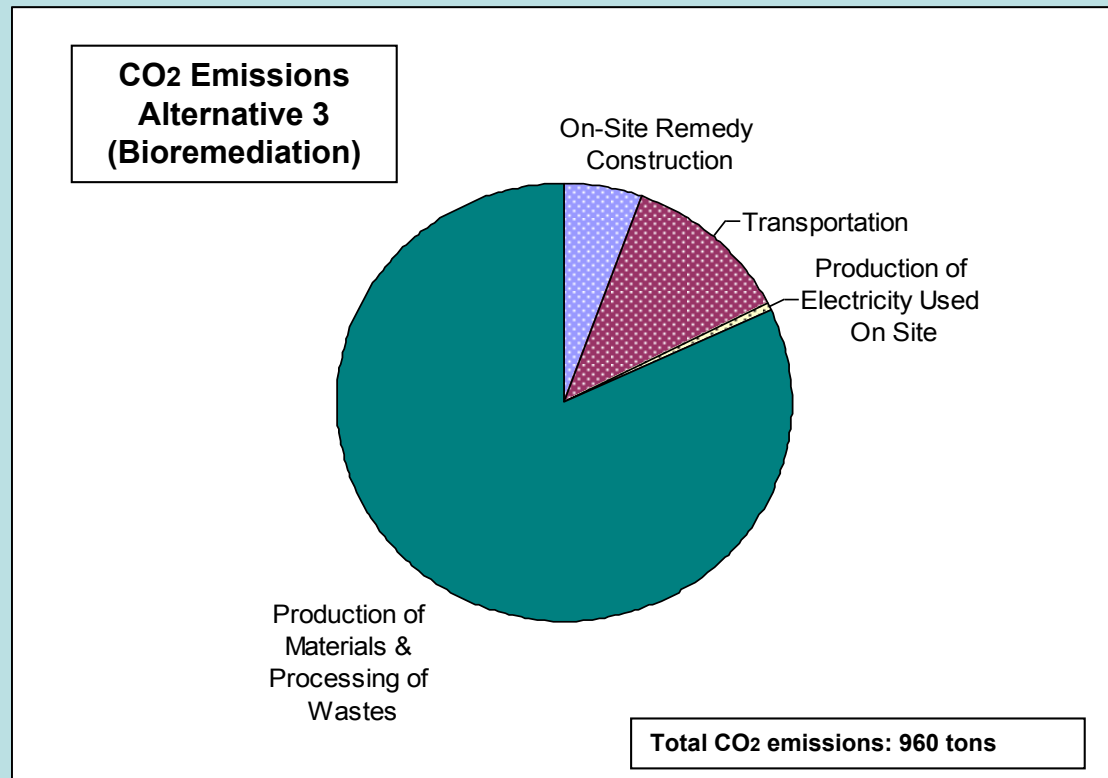
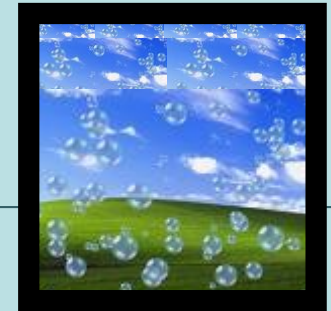
These values are for the life-time of each alternative remedy.

Results – CO₂ Emissions



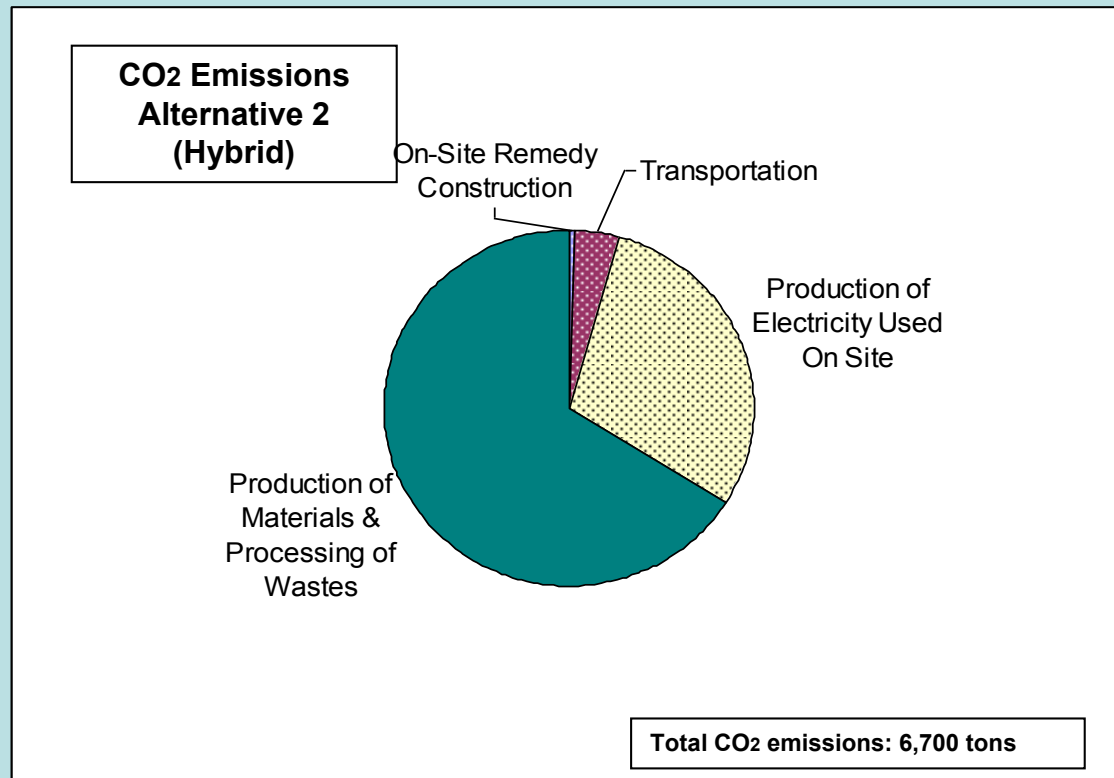
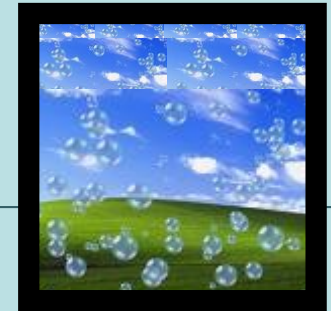
Off-site activities, even those not related to production of electricity used on-site, are a big part of the CO₂ footprint.

Results – CO₂ Emissions



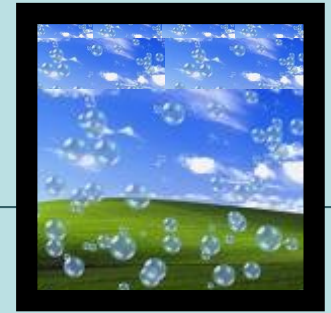
Off-site activities, even those not related to production of electricity used on-site, are a big part of the CO₂ footprint.

Results – CO₂ Emissions



Off-site activities, even those not related to production of electricity used on-site, are a big part of the CO₂ footprint.

Results – CO₂ Emissions



Issues related to CO₂:

- Finding CO₂ emissions factors that include resource extraction as well as manufacturing.
- Taking into account likely lower emissions of CO₂ per unit material produced in the future.
- Being careful not to “double count” in reporting electricity requirements and CO₂ footprint of the remedy.



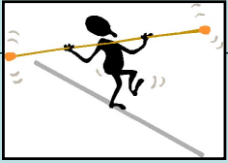
Identify which materials and activities contribute the greatest to the CO₂ footprint and research them thoroughly.

Applying results to our clean-up sites



We need to balance the various aspects of the environmental footprints.

Applying results to our clean-up sites



- **Balance local effects with global effects:**

water resources

greenhouse gas emissions

particulate emissions

- **Balance effects of disparate items:**

natural resource depletion

waste generation

environmental contamination

years to complete remedy

Applying results to our clean-up sites



Balancing disparate environmental impacts will be specific from site to site.



Metrics for environmental impacts are not the only factor at a clean-up site, but should be seen as one of several balancing factors.



In all cases the remedy must first meet threshold criteria, such as protection of human health and the environment.

Life-Cycle Assessment Principles

Improving the Pilot Study --

**We performed complete
(but back-of-the-envelope)
Level 3 calculations for:**

Water use
Electricity use
CO₂ emissions



**We would like to add
Level 3 calculations for:**

Wastes generated
Fossil fuels consumed
Air toxics emitted

We are working with EPA life-cycle analysis experts in ORD (Cincinnati) and with OSRTI to improve and add to our Level 3 calculations.

Life-Cycle Assessment Principles

Improving the Pilot Study --

Run calculations for other remedial activities at Romic:

- soil excavation
- groundwater monitoring
- capping contaminated areas



Life-Cycle Assessment Principles



Life-Cycle Assessment principles helped us greatly in developing our conceptual approach

- Quantify on- and off-site environmental impacts
- Distinguish between local and global impacts
- Compare relative impacts of remedial technologies in a more comprehensive way
- Focus our efforts in reducing the environmental impacts of a remedy



Life-Cycle Assessment Principles



Develop a methodology based on Life-Cycle Assessment principles for estimating environmental footprints

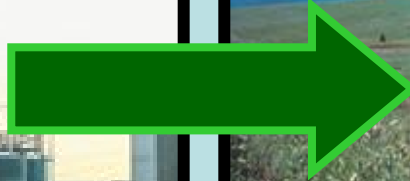
- **Conduct Pilot Studies at three additional sites**
- **Streamline the methodology**
identify aspects of remedies that make the largest contribution to the overall footprints and focus on those
- **Establish a library of data inputs**
- **Designed for regulatory staff and site owners in all clean-up programs**

Key Points

- ★ Yes, it's feasible to estimate the environmental footprint of a clean-up remedy.
- ★ Importance of including off-site manufacturing in estimations of the environmental footprint.
- ★ A streamlined methodology would be helpful for conducting this type of analysis at other sites.



Promoting Green Remediation



**Reducing the Environmental Footprints
of Our Site Clean-ups**



19th Annual Training Conference
June 2-5, 2009 • Atlanta, Georgia

NARPM 2009

**National Association
of Remedial Project Managers**

Green Remediation: What's Next

Delfasco Forge Vapor Intrusion

Greg Fife
OSC, Region 6
fife.greg@epa.gov

Delfasco Forge

- ★ Delfasco Forge
- ★ Grand Prairie, TX
- ★ Vapor Intrusion
- ★ RCRA Enforcement



Delfasco Forge - History

- ★ Delfasco, as in Delaware Forge and Steel Company
- ★ Made practice bombs for DOD
- ★ Outgrew the facility
- ★ Auto repair shop now



Delfasco Forge

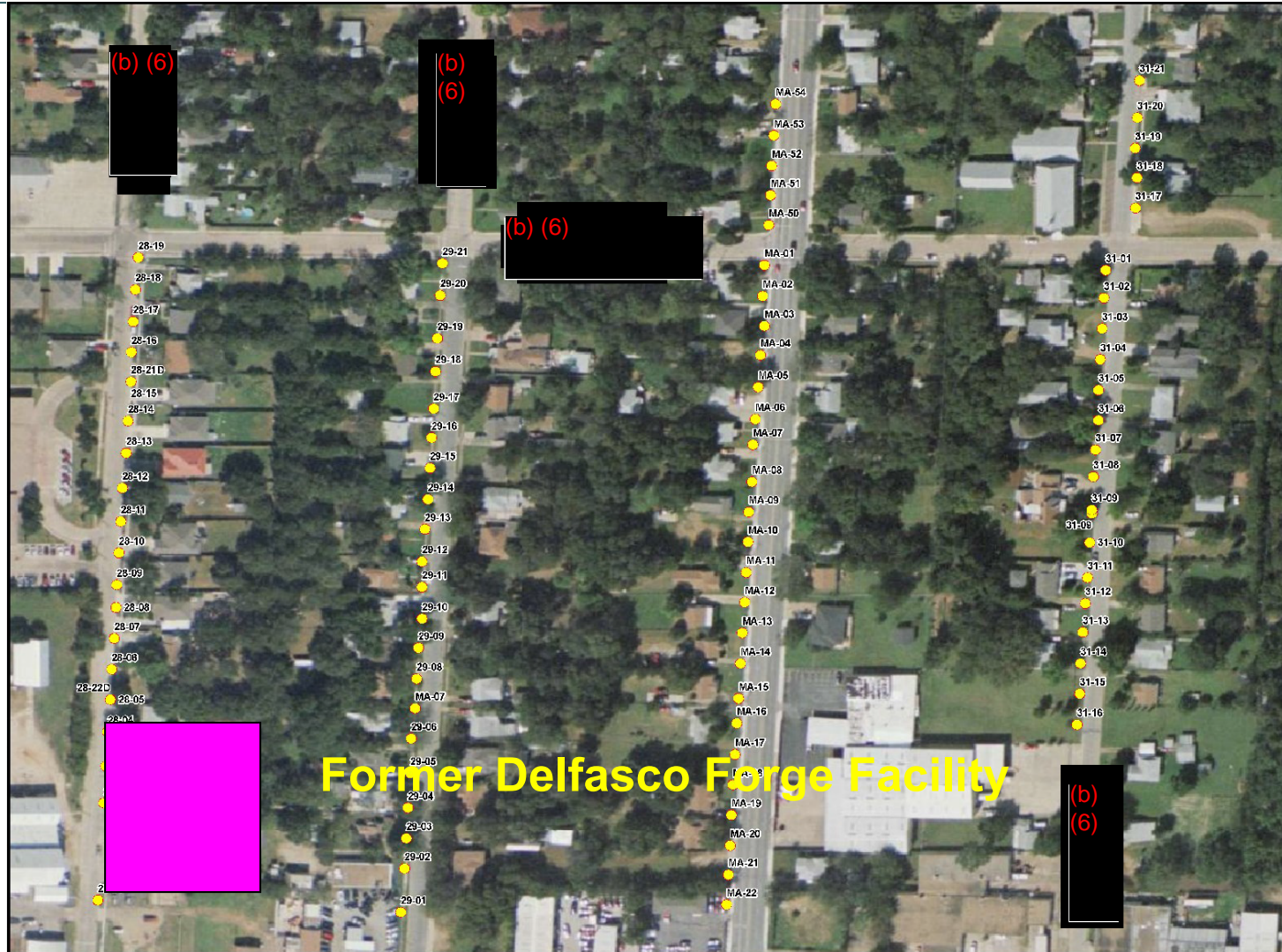
- ✦ Trichloroethylene used in the process
- ✦ Spills, releases, and poor housekeeping led to contamination of groundwater
- ✦ Residential to the north and east
- ✦ Direction of groundwater, Northeast.



Delfasco Neighborhood



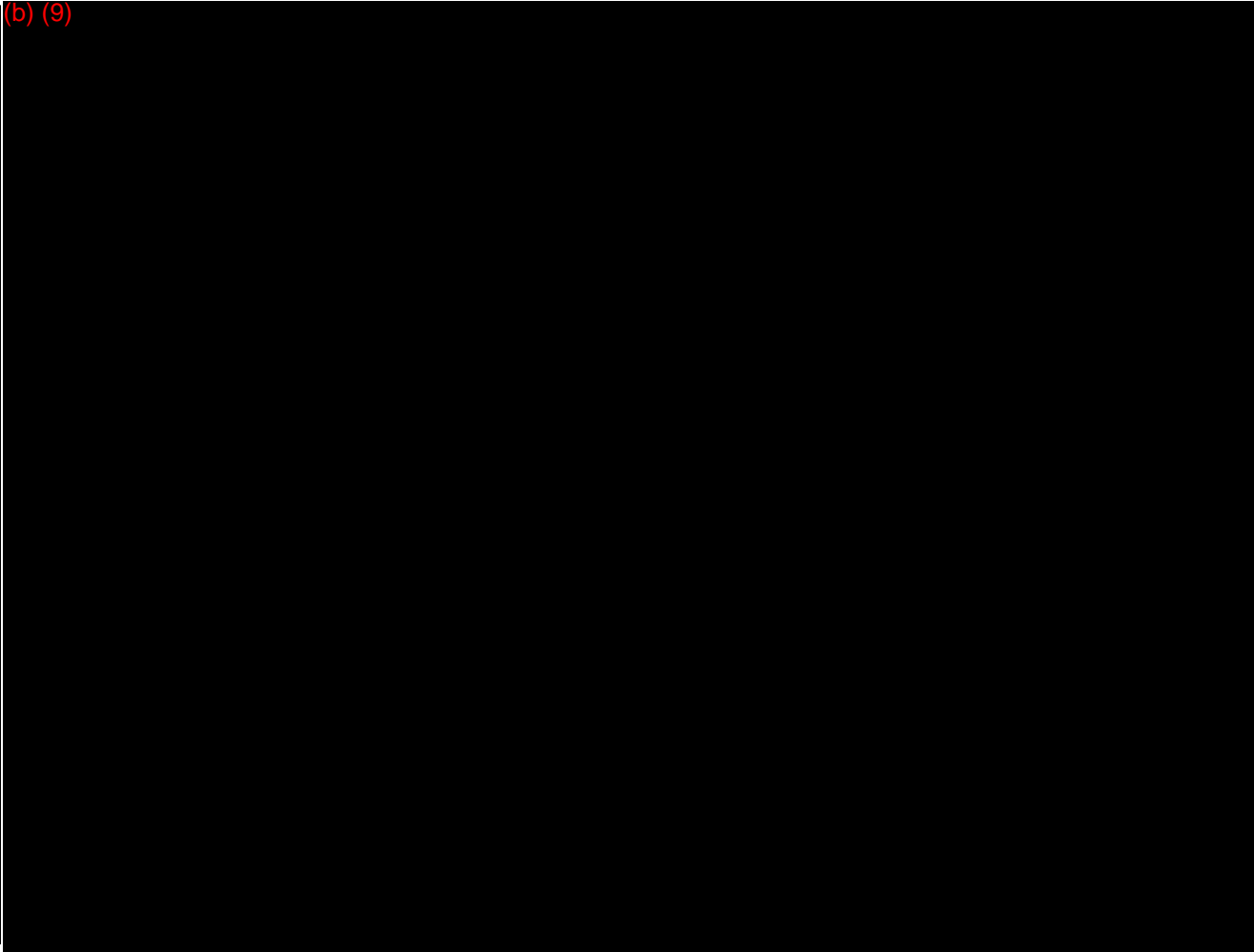
Delfasco Neighborhood



Delfasco Groundwater Plume



(b) (9)



RCRA Indoor Air Sampling

(b) (6)



RCRA & TX Indoor Air Sampling



Passive Soil Gas Sampling

- ★ Semi-quantitative
 - ★ In-Ground
 - ★ 1-2 weeks
 - ★ \$18/sample
 - ★ Beacon
- Environmental

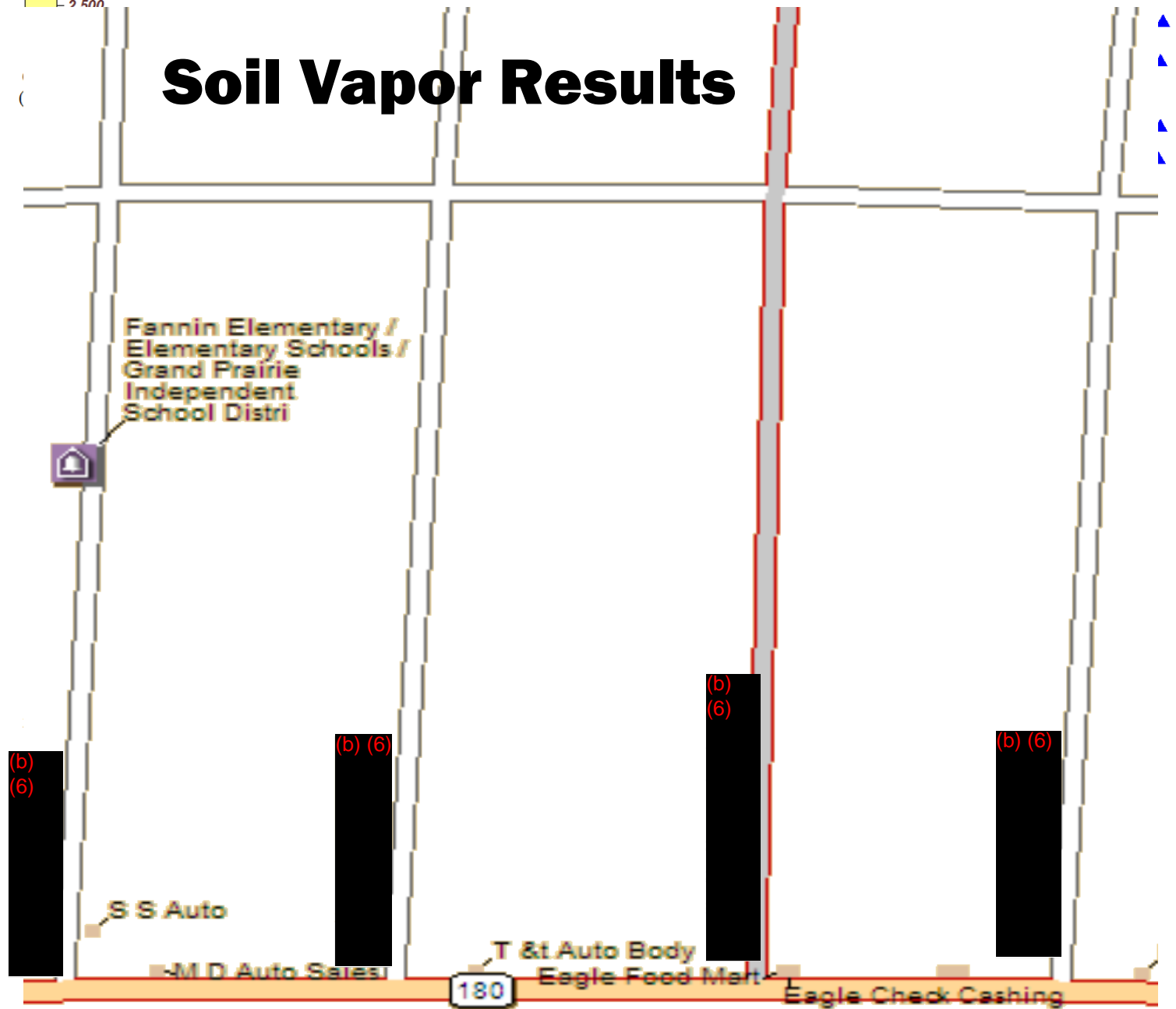


Passive Sampler Deployment

- ★ 100 points + dups, TBs, etc
- ★ 1 day install
- ★ 1 day retrieve
- ★ 8 day turn-around



Soil Vapor Results



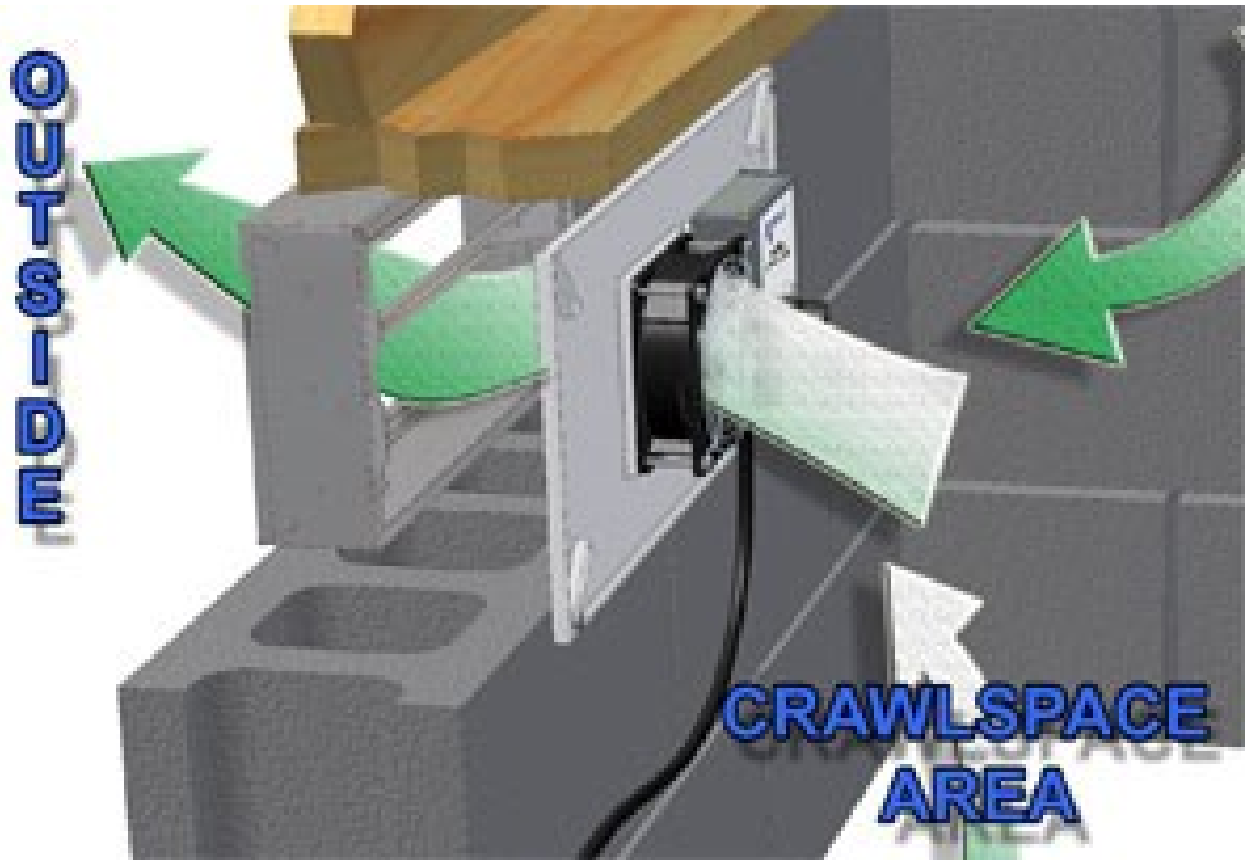
Passive Sampling on the Site

★ Insert bullets



Crawl Space Fan

- ★ Pier and beam construction
- ★ Commercially available exhaust fans



Fan Comparison

- ★ Radon fan - - 60-90 CFM
- ★ \$1,500 per unit

- ★ Crawlspace fan - - 200 CFM
- ★ \$200 per unit



Electrical Costs

- ★ Each fan type, running 24/7/365
- ★ \$3 to \$8 per month



Impact of Electrical Cost on Budget

- ★ \$8 per month, \$96 per year
- ★ Compare to increase price of gasoline
- ★ Federal Standard is 15,000 miles per year
- ★ Avg miles per gallon is 21
- ★ That is 714 gallons per year.
- ★ The \$96 in additional electricity cost is equivalent to **\$0.134 per gallon**



Solar Power Exhaust Fan

- ★ Solar powered
- ★ Panel: 10"x16"x
10 Watt
- Fan: 6" dia.
2500 RPM
200 CFM
55 DB



Crawl Space Fan Effectiveness

- ★ Reduced one home an order of magnitude to right at action level
- ★ Reduced second home two orders of magnitude
- ★ Battery to be installed for longer operation



Solar Fan Installed



Evaluating Potential for Renewable Energy on Contaminated Lands and Mining Sites



Shahid Mahmud
Office of Site Remediation and
Technology Innovation



December 15, 2009



Background

- EPA launched the Siting Renewable Energy on Contaminated Lands and Mining Sites at the 2008 Brownfields Conference.
- EPA has taken a multi-prong approach under this initiative to include:
 - Renewable Energy Mapping on Contaminated Lands & Mine Sites
 - Conducting Outreach Activities
 - Pilot Sites/Project Engagement
 - Tools/Guidance Development

Why Develop Renewable Energy Facilities on EPA Tracked Sites?

- Many EPA tracked lands offer thousands of acres of land
- Situated in areas less likely to be met with aesthetic (NIMBY) opposition
- Have existing electric transmission lines, capacity, roads, and are adequately zoned for such development
- Avoided new infrastructure capital and zoning costs can be significant

Why Develop Renewable Energy Facilities on EPA Tracked Sites?

- May have lower overall transaction costs compared to greenfields
- Reduce the stress on greenfields land for construction of new energy facilities
- Provide clean, emission-free energy for use on-site, locally, and utility grid

Why Develop Renewable Energy Facilities on EPA Tracked Sites?

- Over 16 million acres of potentially contaminated properties (approx. 480,000 sites) across the United States are tracked by EPA
 - ~80% (13.6 million acres) are non-urban
 - ~20% (3.2 million acres) are abandoned mine land
- Cleanup goals have been achieved and controls put in place to ensure long-term protection for more than 850,000 acres
- Reintroduce local job opportunities for development, operation and maintenance of, and equipment manufacture for renewable energy facilities

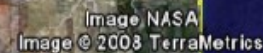
Google Earth Mapping Tool

- Successful EPA-NREL joint venture produced an interactive Google Earth mapping application
- Shows opportunities to site renewable energy on contaminated lands and mining sites in each state
- Produced incentive sheets describing renewable energy development and contaminated lands redevelopment incentives in each state

Temporary Places

- Abandoned Mine Land

- Brownfield
- RCRA
- Federal Superfund
- Non-Federal Superfund



- Abandoned Mine Land
- Brownfield
- RCRA
- Federal Superfund
- Non-Federal Superfund

SUMMITVILLE MINE

City: RIO GRANDE COUNTY

State: CO

Mapped Acreage: 1,230.0

EPA Program: Abandoned Mine Land

EPA Region: 8

EPA ID: COD983778432

Current Environmental Status of Site: [EPA Cleanup Program information](#)

Renewable Energy Potential: Community Wind; Non-Grid Wind; Non-Grid PV Solar
Wind Power Class: 4

Wind Power Density (W/m^2), at 50 Meters: 400-500

Wind Resource Potential: Good

Utility Solar Power Resource ($\text{kWh}/\text{m}^2/\text{day}$): 6.74

Utility Solar Potential: Excellent

Non-Grid Connected Photovoltaic Solar Resource ($\text{kWh}/\text{m}^2/\text{day}$): 5.78

Non-Grid Connected Photovoltaic Solar Potential: Very Good

Resources for Biopower (metric tons/year) : 358,215

Biopower Resource Potential: Excellent

Resources for Biorefinery (metric tons/year) : 356,286

Biorefinery Resource Potential: Excellent

Site-Specific Renewable Energy Data: [Renewable Energy Excel spreadsheet](#)

Data and Methodology Description: [Data Guidelines document](#)

Additional Information: [US and state maps and incentive fact sheets](#)

Contact: cleanenergy@epa.gov

Disclaimer: This map and its associated data are intended to provide a general understanding of the renewable energy potential of EPA tracked sites. They will be updated periodically. Additional site specific analysis is required to determine the actual renewable energy potential of EPA tracked sites. See the Data Guidelines document for specific information on methodology and data considerations.



Search

Fly To Find Businesses Directions

Fly to e.g., 1300 Pennsylvania Ave, 20006

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Select this folder and click on the 'Play' button below, to start it

Temporary Places

EPA Renewable Energy Sites

EPA Site Type Legend

Utility Wind

Community Wind

CSP Utility Solar

PV Utility Solar

Biopower Facility

Biorefinery Facility

Non-Grid Wind

Non-Grid PV Solar

Google Earth instructions

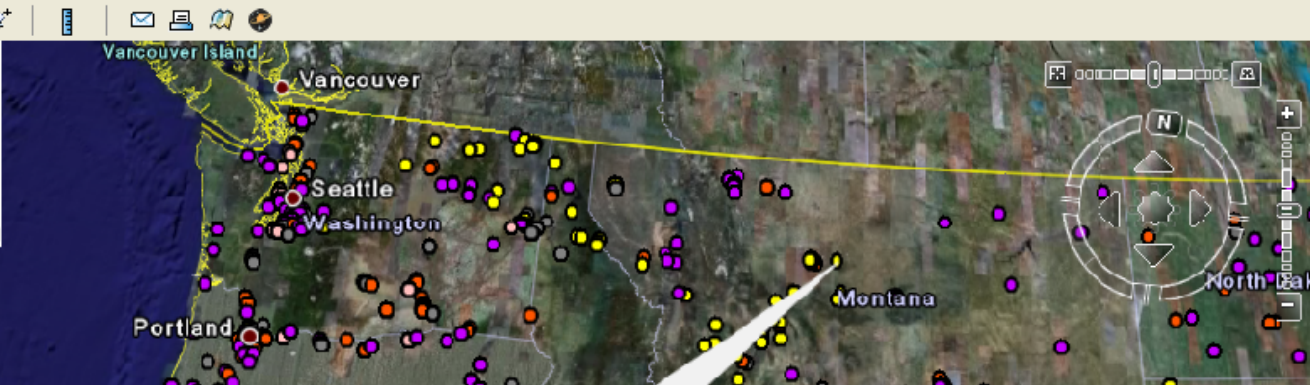
Data Guidelines

Layers

View: Core

Primary Database

- EPA Tracked Sites
- Abandoned Mine Land
 - Brownfield
 - RCRA
 - Federal Superfund
 - Non-Federal Superfund



ANACONDA MINERALS CO, GREAT FALLS REF

City: BLACK EAGLE

State: MT

Mapped Acreage: Unknown

EPA Program: Abandoned Mine Land

EPA Region: 8

EPA ID: MTD093291599

Current Environmental Status of Site: [EPA Cleanup Program information](#)

Renewable Energy Potential: Non-Grid Wind; Non-Grid PV Solar

Wind Power Class: B

Wind Power Density (W/m^2), at 50 Meters: 600-800

Wind Resource Potential: Outstanding

Utility Solar Power Resource ($kWh/m^2/day$): 4.03

Utility Solar Potential: Good

Non-Grid Connected Photovoltaic Solar Resource ($kWh/m^2/day$): 4.74

Non-Grid Connected Photovoltaic Solar Potential: Good

Resources for Biopower (metric tons/year): 576,404

Biopower Resource Potential: Outstanding

Resources for Biorefinery (metric tons/year): 534,836

Biorefinery Resource Potential: Outstanding

Site-Specific Renewable Energy Data: [Renewable Energy Excel spreadsheet](#)

Data and Methodology Description: [Data Guidelines document](#)

Additional Information: [US and state maps and incentive fact sheets](#)

Contact: cleanenergy@epa.gov

Disclaimer: This map and its associated data are intended to provide a general understanding of the renewable energy potential of EPA tracked sites. They will be updated periodically. Additional site specific analysis is required to determine the actual renewable energy potential of EPA tracked sites. See the Data Guidelines document for specific information on methodology and data considerations.



Directions: [To here](#) [From here](#)

Incentives

- State Incentives
 - Grants and Loans
 - Tax abatements, deductions, credits
 - Net metering
 - Other incentives: equipment loan programs for wind production
- Federal incentives
 - Production tax credit for renewable energy: \$0.95/kWh to \$1.95/kWh for sales of electricity for the first 10 years of operation
 - Federal grants and loans
- Database of State Incentives for REs and EE
 - www.dsireusa.org

State Incentives for Achieving Clean and Renewable Energy Development on Contaminated Lands

The development of clean and renewable energy on formerly used land offers many economic and environmental benefits. Combining clean and renewable energy and contaminated land cleanup incentives can allow investors and communities to create economically viable clean and renewable energy redevelopment projects. This document provides information about incentives in your state that can be leveraged for clean and renewable energy and development of contaminated land.



Incentives for Clean and Renewable Energy

Tax Incentives (abatements, deductions, credits, etc.)

Renewable Energy Production Corporate Tax Credits

www.enrwd.state.nm.us/credits/

Provides a tax credit against the corporate income tax of one cent per kWh for companies that generate electricity from wind or biomass. Companies that generate electricity from solar energy receive a tax incentive that varies annually.

Solar Thermal Electric Tax Credits

www.enrwd.state.nm.us/credits/

Offers a 6% credit against gross receipts, compensation, or withholding taxes for the development and construction costs of solar thermal electric plants and associated energy storage devices.

Biomass Equipment & Materials Deduction

www.enrwd.state.nm.us/home.htm

Allows businesses to deduct 100% of the value of biomass equipment and biomass materials used for the processing of bio-power, bio-fuels, or bio-based products in determining the amount of Compensation Tax due.

Technical Assistance and Other Incentives

Customer Solar PV Program

www.pvnm.com/

Offers a Renewable Energy Credit (REC) purchase program. The public utility will purchase RECs from customers who install solar photovoltaic systems (up to 10 kW in capacity) at a rate of \$0.13/kWh through 2018.

Net Metering

www.enrwd.state.nm.us/credits/

Offers availability of net metering to systems up to 80 MW in capacity.

Quick Facts

Public Benefit Fund (PBF)	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Renewable Portfolio Standard	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Investor-owned utilities: 20% by 2020	
Rural electric cooperatives: 10% by 2020	
Net Metering	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Interconnection Standards	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Electric Power Industry Generation by Primary Energy Source (EIA, 2006)	
Petroleum-Fired	0.1% Nuclear -
Natural Gas-Fired	15.8% Hydroelectric 0.5%
Coal-Fired	80.1% Other Renewables 3.4%

Points of Contact

New Mexico Energy, Minerals and Natural Resources Department
www.enrwd.state.nm.us/
Renewable Energy Production Corporate Tax Credits
Michael McClam, P.E., mmcclam@state.nm.us, (505) 476-3319
Solar Thermal Electric Tax Credits
Craig O'Hare, craig.ohare@state.nm.us, (505) 476-3207
Net Metering
Jim Brack, jim.brack@state.nm.us, (505) 827-0682
Biomass Equipment & Materials Deduction
Tax Information Office, office@state.nm.us, (505) 827-0700
Customer Solar PV Program
PNM Customer Generation Programs, (505) 241-2548



Incentives for Development of Contaminated Land

New
Mexico

Funding (grants, loans, bonds, etc.)

Clean Water State Revolving Fund

www.enrwd.state.nm.us/cpl/cwswrf.html

Offers low interest (3% base interest rate) loans with a repayment schedule up to 20 years to municipality-owned brownfields. The fund can be used to fund non-point source projects, including brownfields redevelopment projects.

Brownfields Cleanup Revolving Loan Fund (RLF)

www.enrwd.state.nm.us/cpl/New_Page/cpl_new/BF_VRP_to_nm.htm

Offers low-interest loans to developers and municipalities for site cleanup activities where there is planned redevelopment, through a federally funded program.

Technical Assistance and Other Incentives

Targeted Brownfields Assessment (TBA) Program

www.enrwd.state.nm.us/cpl/New_Page/cpl_new/BF_about_us.htm

Provides free targeted brownfields assessment (TBA) services at brownfield properties. TBA funds can only be used for site screenings, full appropriate inquiry² (or ASTM Phase I environmental site assessment) activities, Phase II environmental site assessments, and remediation planning costs.

Limitations on Liability

Voluntary Response Program

www.enrwd.state.nm.us/

The program issues a Certificate of Completion (COC) for a property, and provides a Covenant Not To Sue (CNTS) to a purchaser or prospective purchaser of the property that did not contribute to the contamination.

Quick Facts

Limitations of Liability	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Number of State-Tracked Contaminated Properties: Includes active Voluntary Remediation Program sites	62
Number of EPA CERCLIS Sites: Sites identified for potential investigation under the federal Superfund Program	173
Number of EPA Brownfields Properties: Properties being funded or addressed under the EPA Brownfields Program	4
There may be some overlap among the categories listed and sites listed may not represent all potentially contaminated sites in New Mexico	

Points of Contact

New Mexico Environment Department
Clean Water State Revolving Fund
Jennifer Priede, jennifer.priede@state.nm.us, (505) 827-0807
Voluntary Response Program
Brownfields Cleanup Revolving Loan Fund, TBA Program
VRP Program Manager, (505) 827-2754

Outreach Efforts

- OSWER engaged in outreach to stakeholders at a variety of venues with Renewable Energy booth and presentations, and stimulated significant interest. Some of these include:
 - Wind and Solar Conferences
 - Summit of Mining Communities
 - Brownfields Conference
 - Mine Expo 08
- OSWER started discussions with ASTSWMO subcommittee on this initiative
- OSWER and Region 9 have discussed this effort with BLM HQ and Arizona
- OSWER conducting series of stakeholder dialogues (Detroit, New Orleans, Los Angeles, Atlanta).

Pilot Sites/Projects

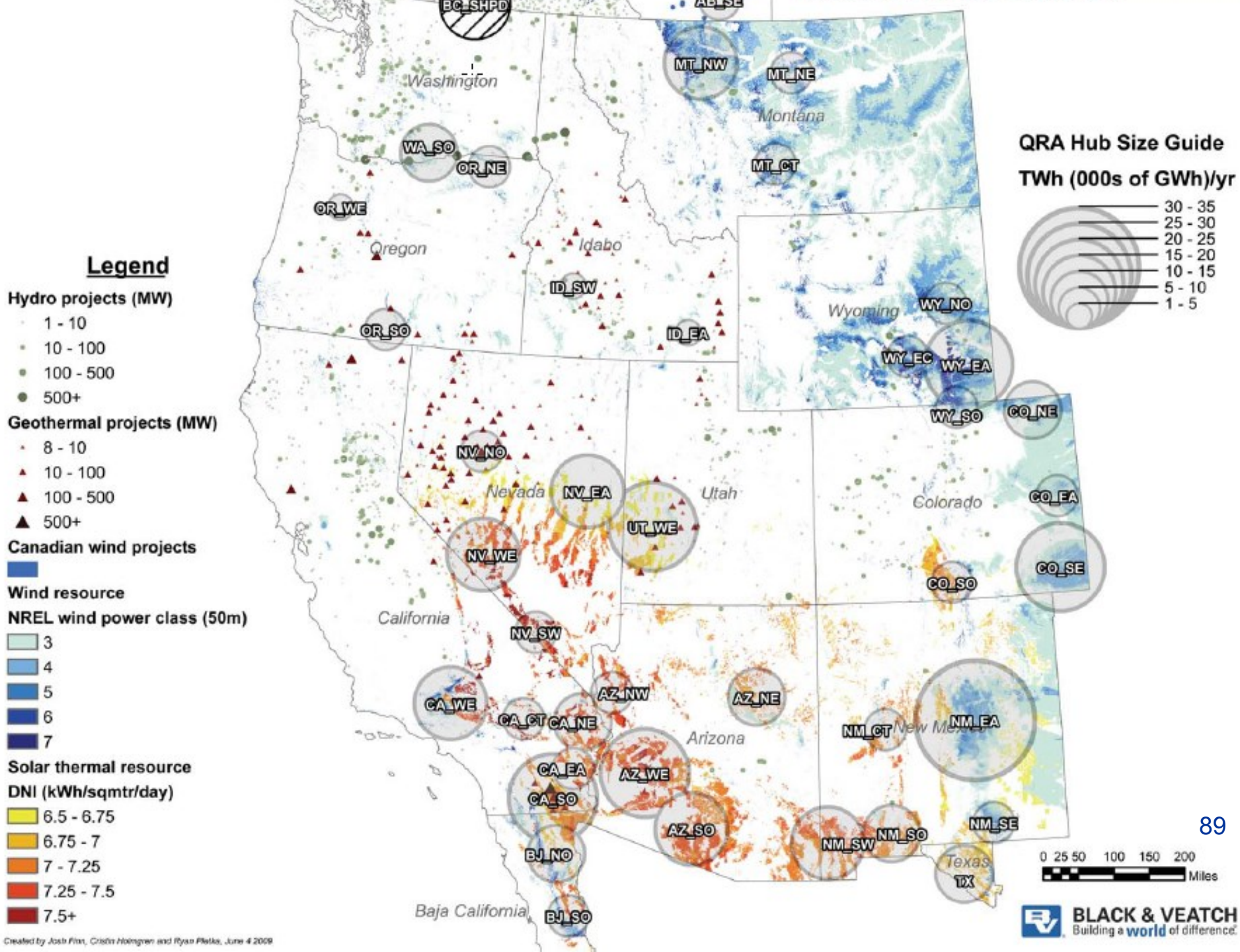
Site Name and Location	Renewable Energy Aspects	Status	Issues/Opportunities
<u>Abandoned/Superfund Sites</u> Summitville, CO	Hydroelectric to power water treatment plant	Phase I construction underway	Project potentially transferable to other sites
Holmes Road Landfill, TX	Solar Power	Contractor Support in-place for Feasibility Study	RFP for Developers
Anaconda, MT	Wind Power with possibility for geothermal	Phase I completed	Developer propose 50 MW Wind Project
<u>Active Site:</u> Chino Mine, NM	Concentrated Solar Power	Met with New Mexico and Freeport-McMoran Freeport to submit proposal	Multiple Agencies Technical Study Need Proposal from Freeport
MolyCorp Mine, NM	Solar Power	Chevron interest in solar project	Chevron conducted Phase I screening

Tools to Encourage Reuse of Impaired Land

- Comfort/Status letters provide information about the site and can clarify liability issues for prospective purchasers and site owners.
- An Ready for Reuse Determination is an environmental status report written in clear language that is designed to provide important information about a site so it can be used without compromising protection for people and the environment.
<http://www.epa.gov/superfund/programs/recycle/pdf/rfrguidance.pdf>
- A site reuse profile, which is used in some regions, highlights a site's background, environmental history, and reuse status.
- At NPL sites, EPA may carve out portions of sites – Partial Deletions to allow certain land uses.
- EPA's *Revitalization Handbook*:
<http://www.epa.gov/compliance/resources/publications/cleanup/brownfields/handbook/bfhbkcmp-08.pdf>
- EPA *Fact Sheet on CERCLA, Brownfields, and Lender Liability*:
http://www.epa.gov/swerosps/bf/aai/lenders_factsheet.pdf
- EPA's *Small Business Liability Relief and Brownfields Revitalization Act*:
<http://www.epa.gov/swerosps/bf/sblrbra.htm>

Potential Collaboration/Next Steps

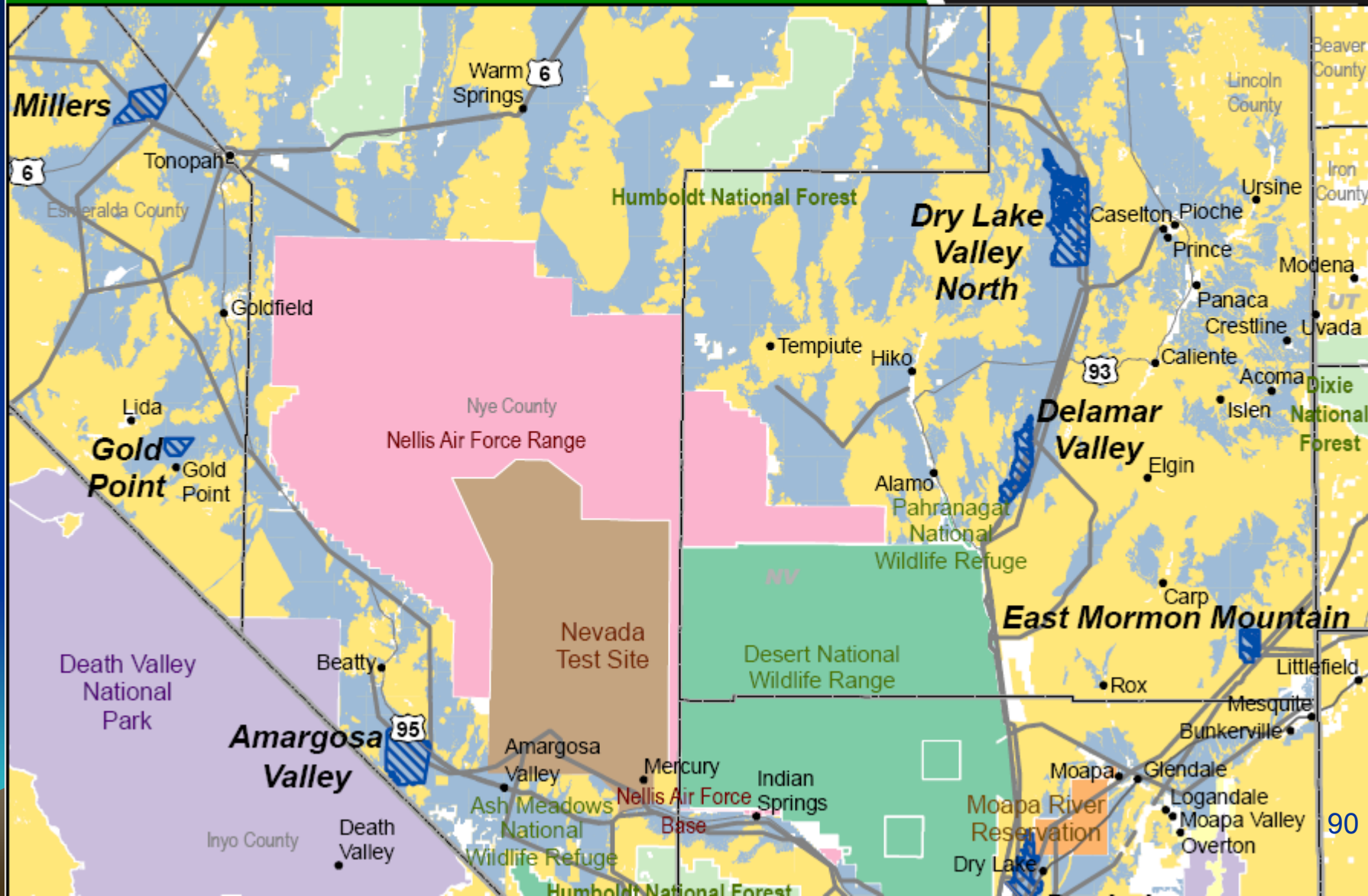
- Multiple efforts ongoing at Federal and State levels to encourage RE Projects
- Some of these efforts include:
 - WGA and DOE – Western Renewable Energy Zones (WREZ)
 - BLM Solar Zones
 - Colorado Resource Generation Development Areas (GDA)
 - California Competitive Renewable Energy Zones (CA CREZ)
- EPA overlay Repower maps on the 4 efforts listed above.
- EPA has shared site information with BLM HQs and BLM Arizona



Solar Energy Study Areas in Nevada

Map Prepared June 5, 2009

Property of the U.S. Departments of Energy and the Interior
for Use in Preparation of their Programmatic Environmental Impact Statement
to Develop and Implement Agency-Specific Programs for Solar Energy Development



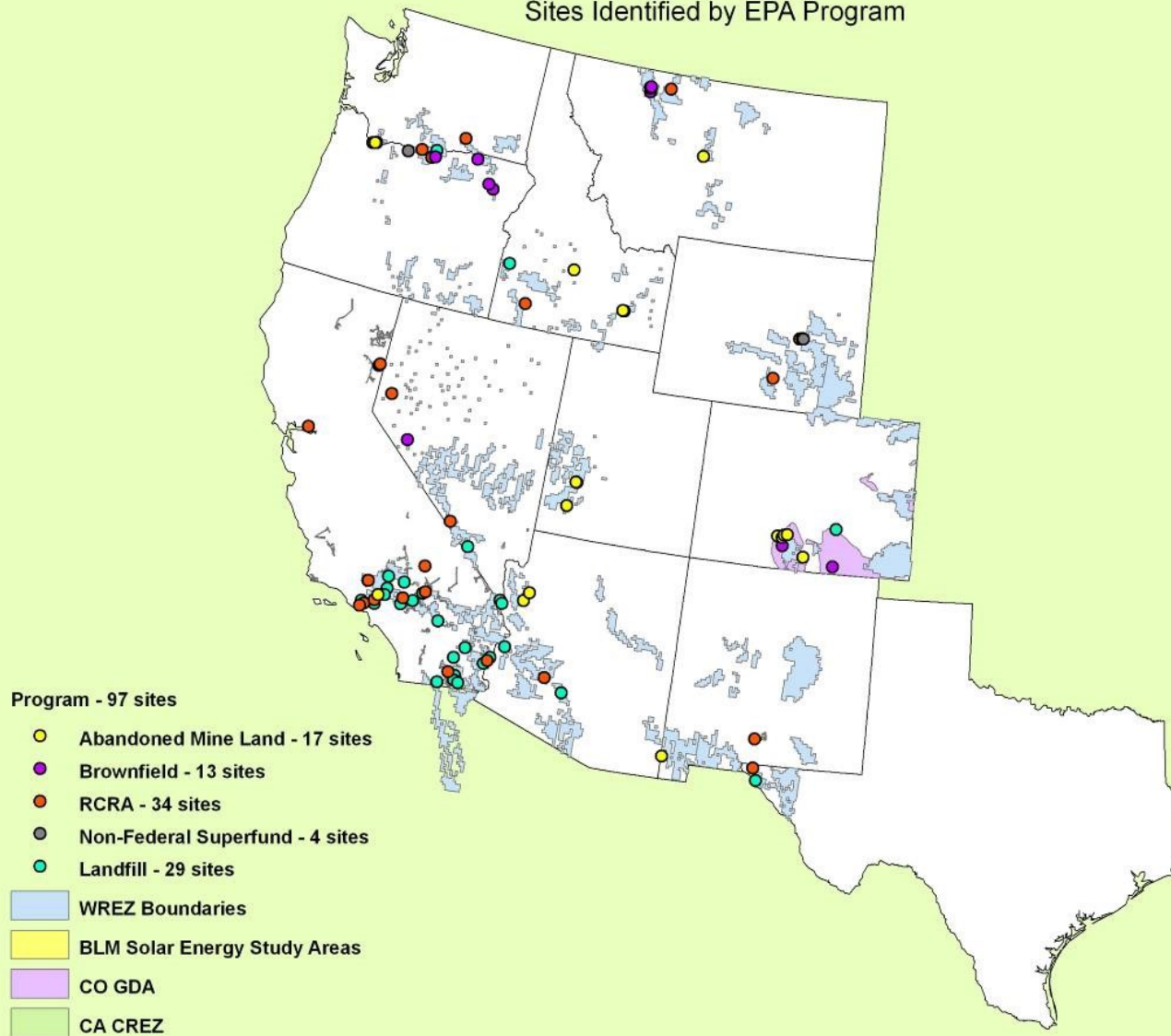
Summary of EPA-tracked Sites Located in REZs

Table 1: Summary of EPA-tracked Sites Located in REZs

Site Type	Number of Sites	Percentage of Total
RCRA	34	35%
Landfills	29	30%
AML	17	18%
Brownfields	13	13%
Non-Federal Superfund	4	4%
TOTAL	97	100%

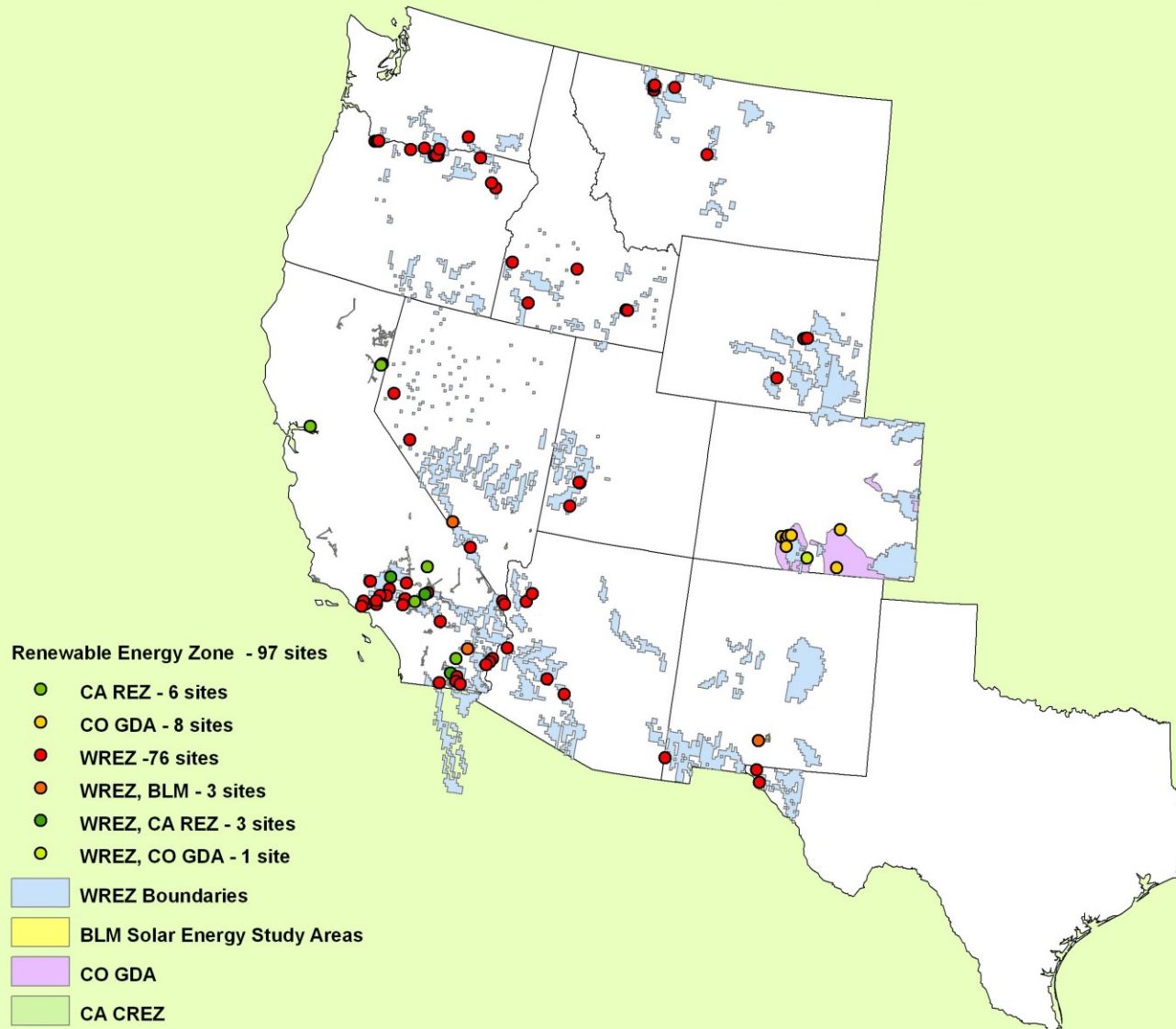
Renewable Energy Zone Areas with EPA Tracked Sites

Sites Identified by EPA Program



Renewable Energy Zone Areas with EPA Tracked Sites

Sites Identified by Renewable Energy Zone



Next Steps!

- Encourage additional collaboration on siting RE projects with Federal Land Management Agencies at mixed ownership sites.
- Collaboration with other key Federal Agencies (DoE, DoD, Department of Commerce, IRS)
- Collaboration with State Organizations (e.g., ASTSWMO)

Thank You

After viewing the links to additional resources,
please complete our online feedback form.



Thank You

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